Fourthly, by restriction of illustrations to such as are absolutely necessary.

General orders have already been issued enforcing the second, third, and fourth conditions, and it is only necessary here to reiterate them with added emphasis.

To carry out the first condition it is ordered that hereafter the first edition of every publication shall be limited to such number as is necessary to supply libraries, educational institutions, the press, State, and foreign officials connected with agriculture, exchanges, and such persons as are rendering tangible service to the Department, either by active cooperation in its work or as special correspondents; and, in addition, a small number, to be reserved for emergencies and for use in correspondence, and to furnish a small supply to be placed in the hands of the Superintendent of Documents for sale. Hereafter all reprints shall be confined to such numbers as may be necessary to replenish the supply of the Superintendent of Documents, where the demand for the same, at a price fixed by the Public Printer, continues.

Chiefs of bureaus, offices, and divisions maintaining free mailing lists will cause the same to be rigidly revised in accordance with the distribution indicated above.

This order does not apply to Farmers' Bulletins or to emergency circulars.

METEOROLOGICAL WORK IN CHINA.

By C. FITZHUGH TALMAN, U. S. Weather Bureau.

The Central Meteorological Observatory, at Tokyo, has just issued a series of publications presenting the results of meteorological observations, by Japanese observers, at the following points in the Chinese Empire for the periods indicated:

Chi-fu, latitude 37° 34′ N., longitude 121° 30′ E., October 1–December 31, 1904.

Hang-chau, latitude 30° 11′ N., longitude 120° 12′ E., October 6, 1904–December 31, 1905.

Han-kau, latitude 30° 35′ N., longitude 114° 17′ E., January 17–December 31, 1905.

Mukden, latitude 41° 48′ N., longitude 123° 23′ E., May 1–December 31, 1905.

Nanking, latitude 32° 5′ N., longitude 118° 49′ E., October 12, 1904–December 31, 1905.

Ryojun (Port Arthur), latitude 38′ 47′ N., longitude 121° 16′ E., July 17–December 31, 1905.

Sha-shi, latitude 30° 18′ N., longitude 112° 15′ E., January 18–December 31, 1905.

Tairen (Dalny), latitude 38° 56′ N., longitude 121° 36′ E., September 7, 1904–December 31, 1905.

Tientsin, latitude 39° 10′ N., longitude 117° 10′ E., September 19, 1904–December 31, 1905.

Yinkow, latitude 40° 40′ N., longitude 122° 14′ E., October 1, 1904–December 31, 1905.

An additional pamphlet contains results from the new Japanese station at Kushunkotan (Korsakovsk), in the island of Sakhalin, for the period from October 10 to December 31, 1905. The date of the opening of this station denotes the eagerness of the Japanese to extend their meteorological net work; for it will be remembered that the treaty by virtue of which southern Sakhalin ceased to be forbidden ground to Japanese enterprise was only signed September 5, 1905. It is also worthy of note that observations at Mukden began less than two months after the occupation of that city by the Japanese army, while the station at Tairen appears to have been operated for about four months within hearing, if not within range, of the enemy's guns at Port Arthur.

The tabulated results for the stations and periods given above fill about two hundred quarto pages, and are uniform in character with those of the second order stations in Japan as published in the Monthly Report of the Central Meteorological Observatory.

Meteorological observations on so ambitious a scale have not previously been undertaken in China, except at the well-known observatories of Hongkong and Zi-ka-wei, the former Russian observatory at Peking, and, latterly, at the German seaport of Tsingtao. The only other observations approaching them in fullness are those recently executed by British observers at Wei-hai-wei.

Of the new Japanese stations four are located at points for which meteorological data appear to have been heretofore entirely lacking; these are Sha-shi, Nanking, Hang-chau, and Tairen.

A fringe of meteorological stations now extends along the China coast, and eight stations exist in the Yang-tze valley above Shanghai. The greater part of these stations are connected with the custom-houses and light-houses of the Imperial Chinese Maritime Customs, and report their observations to the Hongkong and Zi-ka-wei observatories. The Japanese will undoubtedly extend their meteorological service in Manchuria, and are said to be contemplating the establishment of a large meteorological and magnetic observatory at Peking. In the extreme south observations are made at the inland treaty ports of Wu-chau and Lung-chau. Meanwhile the "back blocks" of China—the regions away from the coast and the treaty ports—are completely unknown to the meteorologist, who stands sorely in need of more information concerning the climate of the whole interior of the Asiatic Continent.

China is now dotted over with missionary stations; European and American engineers are building railroads, opening mines, and erecting manufactories in many parts of the Empire; and the Chinese Government is importing foreign teachers for several of its schools and colleges. To the meteorologist this means that China's population of possible meteorological observers is rapidly growing.

If we could press into the service of meteorology a tithe of the educated foreigners now resident in China, we should soon be able to fill some of the most regrettable gaps on the climatic charts of the globe, and also to obtain much light upon the problems connected with the winter "high" and the summer "low" of central Asia.

ABNORMAL APRIL TEMPERATURES IN NEW SOUTH WALES.

By H. A. HUNT, Acting Meteorologist. Dated Sydney Observatory, N. S. W., Australia, May 3, 1906.

The month of April, 1906, possessed such abnormal temperature features in New South Wales that a brief note thereon may be of interest to the readers of the MONTHLY WEATHER REVIEW.

Unseasonably warm weather was experienced throughout the month, and during the Easter holidays what might be termed a hot wave passed slowly over our state; its duration was most remarkable for the month of April. The following consecutive readings were recorded at the Sydney Observatory:

April, 1906.	° F.
13	76.8
14	79.0
15	87.2
16	85.0
17	81.2
18	88.0
19	84.6

Taking the mean temperature for the whole of this month at the observatory, we find that all previous records, extending back to the year 1859, have been eclipsed. The mean for the month just ended was 67.7° F., which is 3° in excess of the normal, and 0.5° higher than the previous next highest mean, that is, 67.2° F., which was the mean for April, 1897.

Taking the average of all maximum readings, the abnormal character of the heat becomes still more apparent. The average maximum for the month just ended was 75.8° F., or 4.9° above the normal, and 1.2° higher than the previous next highest average maximum, that is, 74.6° F., in April, 1897.

The following table shows the means for April, 1906, compared with the results for previous years, at Sydney Observatory:

	Mean temperature.	Mean maximum.	Mean minimum.
	° F.	° F.	° F.
April, 1906	67.7	75.8	59.6
Average for previous 47 years	64.7	70.9	58.3
Excess of 1906 over average for previous 47 years	3.0	4.9	1.3

Unseasonably high temperatures for this month have also been experienced in the other Australian states; and we have noticed by the cablegrams published in the Sydney daily papers that a similar heat visitation was experienced in parts of Great Britain about the same time as our heat wave here, above noted.

SEVERE HAILSTORM IN THE GULF OF MEXICO.

By Mr. R. G. BINDLEY.[1]

[Communicated by Mr. JAMES PAGE, Chief of Division of Ocean Meteorology.]

Whilst crossing the Gulf of Mexico, during the night of March 17 and morning of the 18th, in latitude 28° 48′ N., and longitude 93° 47′ W., we experienced a heavy thunderstorm, and during the height of the storm a hail squall of exceeding violence crossed the vessel. At 8 p. m. the wind was east 5;[2] the sky was overcast with strato-cumulus clouds and a slight haze existed; occasionally a flash of sheet lightning was seen. At 9 p. m. the haze grew slightly denser, being able to see only about two miles, and the clouds were broken in places so that we could discern the stars at intervals. This state continued until 11:30 p. m., when we noticed that the electric storm was advancing toward us; the sheet lightning was flashing more frequently, and the distant rumble of thunder could be heard. The sky had again become completely overcast, and heavy showers of rain began to fall.

At midnight the sheet lightning was almost one continuous flash, with only a second's interval between flashes; occasionally the sky was lighted vividly for three or four minutes at a time. At 0:15 a. m. the first flash of forked lightning was observed in the southeast. The storm approached rapidly and struck the ship at about 0:35 to 0:45 a. m., during which time a most severe and dangerous hail squall crossed the vessel. Its approach was heralded by the loud hissing sound, which generally precedes the heavy squalls, caused by the hailstones striking the water.

When the squall struck the ship the stones were about the size of walnuts, but in the center of the squall they were lumps of ice equal in size to large oranges; some picked up afterwards were two and one-half inches in diameter.

During the squall the ship was stopped and the officer of the watch and helmsman were compelled to seek shelter. The first officer sustained a severe bruise, caused by a stone striking the back of his neck, and the helmsman received a scalp wound from the same cause. These stones fell with such force as to dent the binnacles in several places and chip the paint off rails and other painted surfaces. During the night the barometer was steady at 30.03 (corrected of error); the thermometer at 64° F.; the temperature of the sea surface being 64° to 65° F. After the hail heavy rain set in and lasted until 6 a. m., when the weather generally cleared.

THE SEICHE AND ITS MECHANICAL EXPLANATION.

Prof. Dr. H. Ebert, of Munich, gives the following summary of the extensive memoir on the theory of seiches by Professor Chrystal, published in the Transactions of the Royal Society of Edinburgh, during 1905, with a general abstract in the proceedings of the same society.

After a condensed review of the development of the study of seiches, and a very complete bibliography of the subject, Professor Chrystal gives a condensed statement of the results of his own research, which includes the description of a beautiful model made for the study of seiche oscillations in a rectangular trough, built for that purpose, near Wedderburn, Scotland. He passes then to the second part of his work, which consists of a general theory, now for the first time completely developed, of small longitudinal seiches in lake basins having variable depths and cross sections. An idea of this mathematical theory may be derived from the following statement. The horizontal velocities and accelerations for any particle of water, as also the vertical movements, are expressed as differential functions of a special auxiliary quantity v. The solution of these equations is expressed as a sine and cosine, or Fourier, series, whose coefficients, P, again depend upon the same auxiliary quantity, v. Thus the problem of the seiche, in its most general form, is reduced to that of a vibrating cord, fastened at both ends, and for which the ratio of the tension to the mass, per unit of length, depends upon the same auxiliary quantity, v. In conclusion Doctor Bruner states that the general results of the computations by Professor Chrystal's formula were compared with the formula of Dubois, which is the only rule according to which we have hitherto been able to compute the periodic time of oscillation of the seiche when we know the dimensions of the lake. The result of the comparison shows that the formula of Dubois gives results too large in lakes with concave sides, and too small in lakes with convex sides, but this purely empirical formula in many cases gives a good first approximation. Through this thorough theoretical investigation by Professor Chrystal the study of seiches will certainly receive abundant stimulus.

C. A.

METEOROLOGY IN GERMAN UNIVERSITIES.

The Physikalische Zeitschrift for April 15, 1906, gives quite a complete list of the courses of scientific lectures in German speaking universities in Europe, for the summer term, 1906, from which we select the following list of lectures that specifically touch upon meteorology or climatology. The figures given after each title indicate the number of lectures per week; these are, of course, additional to the hours of laboratory practise, since these lectures correspond to our post graduate courses for attaining the degree Ph. D.

Aachen (Aix-la-Chapelle) University.—Professor Polis: Climatology 2; special topics in meteorology 1; technical meteorology 1.

Berlin University.—Professor Börnstein: The weather and the prediction of the weather, 1. Professor von Bezold: Statics and dynamics of the atmosphere, 2; practical meteorological work for beginners, 3; same, for advanced students, 2; meteorological conferences, 1. Professor Hellmann: Introduction to meteorology, instrumental, observational, and historical, 2; practical climatology, 1. Professor Less: Introduction to climatology, 1; special weather phenomena, 1.

Berlin Technical High School.—Professor Cassner: Introduction to the theory of highs and lows in meteorology.

Breslau University.—Professor von der Borne: Physics of the atmosphere of the earth, 2; geophysical conferences and exercises, occasional.

Göttingen University.—Professor Wiechert: Terrestrial magnetism, 2; aurora, 1; work in geophysics, 1.

Gratz University.—Professor Benndorff: Theoretical meteorology, 3; practise in physical computations, 2.

Greifswald University.—Professor Holtz: Meteorology, including optical phenomena, 1; physics of the earth with experiments, 1.

Halle University.—Professor Buchholtz: Theory of atmospheric refraction, etc., 3.

Heidelberg University.—Professor Pockels: Introduction to theoretical physics, 3; geophysics, 1. Professor Wolf: Meteorology, 2.

Innsbruck University.—Professor Trabert: Cosmical physics, 2; elements of climatology, 1; meteorological work, 2.

Karlsruhe Technical High School.—Professor Schultheiss: Synoptic meteorology with practise, 1.

Prague University.—Professor Spitaler: Astrophysics, 2; terrestrial magnetism, 2.

[1] Mr. Bindley was an officer of the British S. S. *Jamaican*, Captain Robb, bound from Galveston to Liverpool, at the time when this storm was encountered.

[2] That is, the force of the wind was 5 on the Beaufort scale.—EDITOR.